1. (Original) A method for obtaining a magnetic field correlation ("MFC") of a sample using magnetic resonance imaging ("MRI") comprising:

applying two or more spin echo sequences to the sample to obtain a resultant information, wherein at least one spin echo sequence is an asymmetric spin echo sequence; and

determining the MFC as a function of the resultant information.

- 2. (Original) The method of claim 1, wherein the spin echo sequences include an Asymmetric Dual Spin Echo Sequence (ADSE) having multiple echoes.
- 3. (Original) The method of claim 1, wherein the spin echo sequences include an Echo Planar Imaging-Asymmetric Dual Spin Echo Sequence (EPI-ADSE) having multiple echoes.
- 4. (Currently amended) The method of claim 1, wherein the asymmetric spin echo sequence is applied by shifting a refocusing pulse that is applied to the sample wherein a first time (t_1) between a rotation pulse that is applied to the sample and the refocusing pulse is not equal to a second time (t_2) between the refocusing pulse and obtaining the resultant information.
- 5. (Currently amended) The method of claim 1, wherein the asymmetric spin echo sequence is applied by shifting obtaining of the resultant information wherein a first time

- (t₁) between a rotation pulse that is applied to the sample and the refocusing pulse is not equal to a second time (t₂) between the refocusing pulse and obtaining the resultant information.
- 6. (Original) The method of claim 1, wherein the MFC is determined as a function of the resultant information by applying the formula

$$K[(2n-1)\Delta t] \approx \frac{(-1)^{n+1}}{2\gamma^2 t_s^2} \ln \left[\frac{S_n(0)S_{n-1}(t_s)}{S_n(t_s)S_{n-1}(0)} \right],$$

wherein γ is the proton gyromagnetic ratio, S_n is the signal intensity of the nth echo; $t_s = \left|t_1 - t_2\right|$, where t_1 is the time between a rotation pulse that is applied to the sample and a refocusing pulse that is applied to the sample and t_2 is the time between the refocusing pulse and obtaining the resultant information.

- 7. (Original) The method of claim 1, further comprising generating an image as a function of the determined MFC.
- 8. (Original) The method of claim 1, further comprising determining a distribution of a paramagnetic element in the sample as a function of the determined MFC.
- 9. (Original) The method of claim 1, further comprising determining a distribution of iron in the sample as a function of the determined MFC.

4

- 10. (Original) The method of claim 1, further comprising adding a contrast agent to the sample prior to applying the spin echo sequences.
- 11. (Original) The method of claim 10, wherein the contrast agent is gadopentetate dimeglumine ("Gd-DTPA").
- 12. (Original) The method of claim 1, further comprising classifying a tumor in the sample.
- 13. (Original) A system for obtaining a magnetic field correlation ("MFC") of a sample using magnetic resonance imaging ("MRI") comprising:

a storage medium, wherein the storage medium includes software that is capable of being executed to perform steps comprising:

applying two or more spin echo sequences to the sample to obtain a resultant information, wherein at least one spin echo sequence is an asymmetric spin echo sequence; and

determining the MFC as a function of the resultant information.

Claims 14-24 (Cancelled).

25. (Original) A software arrangement which, when executed on a processing device, configures the processing device to measure a magnetic field correlation ("MFC") of a

5

sample using magnetic resonance imaging ("MRI") comprising a set of instructions which when executed by the processing device perform steps comprising:

applying two or more spin echo sequences to the sample to obtain a resultant information, wherein at least one spin echo sequence is an asymmetric spin echo sequence; and

determining the MFC as a function of the resultant information.

Claims 26-36 (Cancelled).

37. (New) A method for obtaining a magnetic field correlation ("MFC") of a sample, comprising:

applying two or more magnetic resonance imaging sequences to a predetermined region of the sample at a plurality of points in time to produce resultant data; and

determining the MFC as a function of at least one set of molecules provided in the sample and the resultant data.

- 38. (New) The method according to claim 37, wherein the molecules include at least one of water molecules or fluorine molecules.
- 39. (New) The method according to claim 37, wherein the magnetic resonance imaging sequences include spin echo sequences.